OFDM DATA DEMODULATOR SYNCHRONIZATION

ABSTRACT

Orthogonal frequency division multiplexing (OFDM) receiver embodiments of the invention provide data demodulator synchronization by finding the end of the short preamble in an IEEE-802.11a burst transmission. This method exploits the fact that there are certain symmetries in the long-preamble that can be used to determine synchronization. The long-preamble sequence is composed of a guard interval (GI) and two long-preamble symbols; the GI is the last 32 samples of the long-preamble symbol. The 32nd sample of the long-preamble acts as a "pilot" or "anchor" sample in that the previous N and subsequent N samples are complex conjugates, or conjugate "mirror" vectors. Due to the periodicities of the long-preamble, this property repeats every 32 samples. No other samples in the long preamble exhibit this property. Coherent combining is used in one embodiment for robustness. Once this "pilot" or "anchor" sample is located, the end of the short-preamble is declared to have occurred 32 samples earlier, thus establishing a time reference.